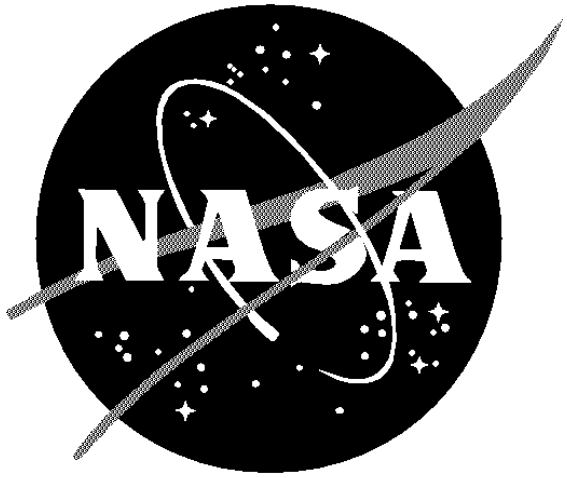

National Aeronautics and Space Administration

December 15, 1997

NRA-97-MTPE-15

RESEARCH ANNOUNCEMENT

NASA/NSF/DOE/USDA/NOAA JOINT PROGRAM ON TERRESTRIAL ECOLOGY AND GLOBAL CHANGE

Proposals Due - February 20, 1998

OMB Approval No. 2700-0087

NASA/NSF/DOE/USDA/NOAA JOINT PROGRAM ON TERRESTRIAL ECOLOGY AND GLOBAL CHANGE

NASA Research Announcement
Soliciting Research Proposals
for
Period Ending
February 20, 1998

NRA-97-MTPE-15
Issued December 15, 1997

Office of Mission to Planet Earth
National Aeronautics and Space Administration
Washington, DC 20546

NASA/NSF/DOE/USDA/NOAA JOINT PROGRAM ON TERRESTRIAL ECOLOGY AND GLOBAL CHANGE

I. PURPOSE OF THIS NASA RESEARCH ANNOUNCEMENT

In concert with the U.S. Global Change Research Program (USGCRP) and with the intent of enhancing interagency collaboration, the National Aeronautics and Space Administration (NASA), the National Science Foundation (NSF), the Department of Energy (DOE), the United States Department of Agriculture (USDA), and the National Oceanic and Atmospheric Administration (NOAA) announce their interest in receiving proposals for research on terrestrial ecology as it relates to global environmental changes. This NASA Research Announcement (NRA) encourages multi-disciplinary applications involving companion experimental/manipulative and modeling efforts to provide critically needed data and information for improved predictions of global change phenomena in three equally important areas: (1) the interactions and feedback between terrestrial ecosystems and the atmosphere, and among linked ecosystems at watershed and landscape scales, (2) the role of terrestrial ecosystems as a source or sink of carbon dioxide and other trace gases, and (3) the consequences of global-scale environmental changes on terrestrial ecosystems, including plant and animal populations. Research proposed for this competition is encouraged to take advantage of existing programs, research sites and facilities, or data sets of other agencies with multi-disciplinary efforts.

One-year scoping proposals also are solicited that involve developing and demonstrating the feasibility of new experimental approaches and/or facilities for field studies to investigate the responses and/or feedback effects of terrestrial ecosystems to global environmental changes.

II. RELEVANCE OF THIS NASA RESEARCH ANNOUNCEMENT

In 1993, the Committee on Earth and Environmental Sciences (since succeeded by the Committee on Environment and Natural Resources) first called for enhanced terrestrial ecology research on global change to fill critical gaps in the overall USGCRP research strategy. NSF, DOE, USDA, and NASA teamed together to augment terrestrial ecological research on global change with a special competition. This request for proposals extends the research begun as a result of the first three Terrestrial Ecology and Global Change (TECO) competitions in fiscal years 1995, 1996, and 1997. NOAA is a new partner in the 1998 TECO competition. These TECO competitions have enabled and will continue to enable more comprehensive research on the combined response of terrestrial ecosystems to global-scale environmental changes that are occurring or are expected to occur and the influence of terrestrial ecosystems on environmental phenomena.

This request for proposals also extends and complements current USGCRP activities supported by the five agencies participating in this announcement. These activities include the NASA Mission to Planet Earth (MTPE) programs on Terrestrial Ecology and Land Cover and Land Use Change; the NSF programs on Ecological Rates of Change (EROC), Water, Energy, Atmosphere, Vegetation and Earth (WEAVE), Land Margin Ecosystem Research (LMER), and Ecological Diversity (ED); the DOE Programs on Ecosystem Research (PER), Terrestrial Carbon Processes (TCP), and the National Institute for Global Environmental Change (NIGEC); the USDA programs on Forest/Range/Crop/Aquatic Ecosystems, Soils and Soil Biology, and Plant Responses to the Environment; and the

NOAA program on Climate and Global Change. Information on these programs is available at the agency web sites listed in Appendix E.

The USGCRP research strategy calls for a balance between ground- and space-based research activities and close cooperation among agencies that takes advantage of their differing interests, capabilities, areas of expertise, and agency missions. NASA leads efforts relating to satellite observations of the Earth as well as research to interpret and understand these observations. NSF focuses on broadly based fundamental research to improve understanding of the Earth system. DOE focuses on research to predict the behavior of the global climate system on decadal to centennial time scales in response to changes in atmospheric composition, to evaluate the contribution of energy-based emissions to climate change, and to understand the consequences of atmospheric and climate changes due to energy production and use. USDA focuses on the roles and consequences for agriculture, food production, and forests of global-scale environmental change. NOAA leads efforts relating to its interests in improving predictions of atmospheric and oceanic behavior.

III. GUIDANCE FOR PROPOSERS

A. Eligibility

Participation in TECO is open to all institutions eligible to receive support from NASA, NSF, DOE, USDA, or NOAA. Civil servants in U.S. government research laboratories are eligible to apply, but may not request civil service salary reimbursement. NSF will not fund applications from Federally Funded Research and Development Centers (FFRDCs), but the other participating agencies may fund FFRDCs. Proposals from non-U.S. institutions will only be considered by NASA. Participation by non-U.S. Principal Investigators in TECO is subject to the guidelines described in Appendix D, which include a no-exchange-of-funds provision.

B. Technical Information and Instructions for Proposers

Appendix A provides technical and program information concerning the nature of proposals being sought. Appendix B provides amendatory guidance to the general guidelines for responding to NASA Research Announcements contained in Appendix C. Appendix C, general instructions for responding to NASA Research Announcements, is applicable to all proposals submitted under this NRA unless superseded by the guidance in Appendix B. Appendix D contains instructions for foreign participation in this opportunity. Appendix E provides the URL addresses for accessing world wide web home pages with information relevant to this NRA. If electronic access is not available to the prospective proposers, a hard copy of relevant reference(s) can be requested by calling (202) 358-3552 and leaving a voice mail message. Please leave your full name and address, including zip code, and your telephone number, including area code. *Prospective investigators are urged to read the information in all of the Appendices and to follow the specific guidelines therein carefully.*

C. Proposal Submission, Review, and Administration

Submission of an original and 15 copies of each proposal must be received no later than 4:30 p.m. E.S.T., February 20, 1998, in order to be accepted under this notice and to permit timely consideration for award by the participating agencies during FY 1998.

To provide a consistent format for the review process for this interagency announcement, the preparation and submission of proposals must follow the guidelines and use the forms given in the NSF Grant Proposal Guide (GPG), NSF 98-2, and Proposal Forms Kit, NSF 98-3 (see Appendix B, section I, for more information). *Proposers should note that all proposals must be submitted directly to NASA and, thus, electronic submission via the NSF FastLane Project is not an option for TECO and must not be used. Also, the review criteria listed in NSF 98-2 are superseded by those listed in Appendix B of this announcement.*

Proposals submitted in response to this interagency announcement are to be submitted to NASA. The participating agencies will jointly manage the TECO program throughout the entire phase from the receipt and review of proposals until the close-out of awards. Proposals will be evaluated through an external peer review (merit review) process conducted jointly by the participating agencies based on the evaluation criteria listed in Appendix B. Final selection of awardees by the agencies will be based on the peer review panel's recommendations and programmatic considerations. Each award will be administered by a single agency. Each agency supporting an award will act as the sole administrative unit for that award although all successful awards will be identified with the joint interagency TECO program.

Proposals may request funding for projects with a duration not to exceed three years and a total budget not to exceed $500,000 per year. The overall estimated amount of funding for this program is $6,000,000 in FY 1998, depending on the availability of funds from each agency. Principal investigators may be requested to modify their budgets and work plans to comply with special requirements of the particular agency supporting their award. The principal investigator of an award will be requested to travel to an annual meeting of all principal investigators to discuss additional collaboration, sharing of information, and interaction of efforts among successful projects funded through TECO and other global change programs mentioned above. Budget requests should include travel costs to attend such a meeting.

A complete proposal schedule for the TECO program is given below:

Proposals Due at NASA Headquarters: 4:30 pm, E.S.T., February 20, 1998

Announcement of Final Selections: July, 1998

The following items apply only to this announcement.

Identifier: NRA-97-MTPE-15

Submit Proposals to:
TECO
Code Y
400 Virginia Avenue, SW, Suite 700
Washington, DC 20024
USA

For overnight mail delivery purposes only the recipient telephone number is (202) 554-2775.

Number of Copies Required: 15

Submit One Additional Copy:
of **Foreign Proposals** to:

NASA Headquarters
Office of External Relations
Mission to Planet Earth Division
Mail Code IY
300 E Street, SW
Washington, DC 20546, USA

Selecting Official for NASA TECO Proposals:	Director, Science Division, Office of Mission to Planet Earth
Selecting Officials for NSF TECO Proposals:	Director, Division of Environmental Biology and Director, Division of Integrative Biology & Neuroscience
Selecting Official for DOE TECO Proposals:	Director, Office of Biological and Environmental Research
Selecting Official for USDA Environment TECO Proposals:	Division Director, Natural Resources & National Research Intiative Competitive Grants Program
Selecting Official for NOAA TECO Proposals:	Director, Office of Global Programs

Obtain Additional Information from:

NASA -

Dr. Diane E. Wickland
Terrestrial Ecology Program
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Anthony.Janetos@hq.nasa.gov

DOE -

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FAX: (301) 903-8519
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DOE (cont.) - Dr. Roger Dahlman
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Germantown, MD 20874-1290
Telephone: (301) 903-4951
FAX: (301) 903-8519
roger.dahlman@oer.doe.gov

NSF - Dr. Gus Shaver
Division of Environmental Biology, Room 635
National Science Foundation
4201 Wilson Boulevard
Arlington, VA 22230
Telephone: (703) 306-1479
FAX: (703) 306-0367
gshaver@nsf.gov

Drs. Andy Phillips and Erik Nilsen
Division of Integrative Biology & Neuroscience, Room 685
National Science Foundation
4201 Wilson Boulevard
Arlington, VA 22230
Telephone: (703) 306-1421
FAX: (703) 306-0349
jphillip@nsf.gov / enilsen@nsf.gov

USDA - Anne H. Datko
Division Director, Natural Resources & Environment
National Research Initiative Competitive Grants Program
U.S. Department of Agriculture, Stop 2241
Washington, D.C. 20250-2241
Telephone: (202) 401-4871
FAX: (202) 401-6488
adatko@reeusda.gov

NOAA - Dr. Rick Lawford
GCIP Project Manager
Office of Global Programs
National Oceanic and Atmospheric Administration
1100 Wayne Avenue
Silver Spring, MD
Telephone: (301) 427-2089 Ext. 40
FAX: (301) 427-2222
lawford@ogp.noaa.gov

Your interest and cooperation in participating in this opportunity are appreciated.

William F. Townsend
Acting Associate Administrator for

Mission to Planet Earth

Enclosures:

Appendix A - Technical Information on TECO Research Topics Solicited
Appendix B - Amendatory Guidance to the General Guidelines Contained in Appendix C and Applicable Only to this NRA
Appendix C - Instructions for Responding to NASA Research Announcements
Appendix D - Guidelines for Foreign Participation
Appendix E - Electronic Addresses

APPENDIX A

TECHNICAL INFORMATION ON TECO RESEARCH TOPICS SOLICITED

I. BACKGROUND

Natural and human-induced changes in the Earth's environment have increased the need to improve understanding of not only the effects of global environmental changes on terrestrial ecosystems and organisms, but also of the effects ecosystems have on the environment at a global scale. Various global-scale environmental changes that are known or have the potential to affect terrestrial ecosystems have already been documented (e.g., increasing atmospheric CO_2 and other trace gases, global average increase in temperature, decreasing stratospheric ozone and increases in tropospheric ozone, and land transformations, including changes in land cover and land use). Some of these changes are expected to continue, if not increase due to continuing human activities. Other potential global-scale environmental changes could occur in the future due directly or indirectly to human activities (e.g., altered precipitation patterns, increased severity and frequency of extreme events related to climate change). Presently, what is lacking is an understanding of the potential combined effects of global-scale environmental changes on essential ecosystem components, functions, and processes, particularly the effects of multiple and interacting environmental changes such as changes in climate and atmospheric composition and land transformations that are outside the range normally experienced by terrestrial ecosystems. It is unclear from existing information how the essential functions of species or ecosystems are being or will be affected by global environmental changes in the future, on scales from individual organisms to populations, communities, ecosystems, landscapes and subcontinental regions. There are also significant uncertainties regarding the role of terrestrial ecosystems in affecting global-scale changes and how natural and human-induced changes in terrestrial ecosystems may feedback on and influence global phenomena. Without the ability to make such projections, implications of the changes for the sustainability of ecosystems as a support system for humans remain uncertain.

The goal for this research is to improve the scientific understanding of how plant and animal species, ecological characteristics and processes, and ecosystems effect and are affected by global change over a range of time scales. This research will enhance capabilities to assess the probable consequences of multiple influences (e.g., concurrent changes in climate, atmospheric composition, land transformations/land use) and their feedback effects. The research also will increase the capability for extending experimentally-derived information obtained at smaller geographical scales (e.g., plot-size, stand-level, patch-size) and shorter time frames (e.g., growing seasons) to landscape and larger scales (e.g., regions, river basins) at longer temporal intervals (e.g., decades, centuries).

To achieve this scientific understanding, innovative field experiments and observational studies are needed to address interactions of ecological processes and combinations of effects related to global change; to relate observed effects to causative factors; and to test predictive response models. Also, to improve predictability, new modeling efforts will be needed for extrapolating information to other systems and across multiple scales that will contribute to the development of regional and subcontinental models and ecological models that are fully interactive with other Earth system models (e.g., Dynamic Global Vegetation Models).

II. PROPOSAL TOPICS REQUESTED

Agencies involved in this interagency announcement for the TECO program encourage multi-disciplinary applications involving companion experimental, manipulative, remote sensing, and modeling efforts to provide critically needed data and understanding for improved predictions of global change phenomena in the following, equally important areas:

A. Ecosystem Feedbacks to Global Change

The goal of research in this area is to improve the scientific understanding of the full range of interactions and feedbacks between terrestrial ecosystems and the atmosphere (e.g., water and energy exchange, aerosol exchange, or nutrient fluxes) and among linked ecosystems at a landscape scale (e.g., biotic propagule dispersal, land-water interactions, or biogeochemical linkages). Research that addresses climate effects on vegetation and subsequent changes in energy partitioning is of interest. Research that addresses empirically-based representation of vegetation, ecosystem, or landscape feedbacks in climate models is of interest. Research that addresses short or long time scales (e.g., days to seasons to years to decades to centuries) and that considers combinations of factors and the effects of time-lags, buffers, or thresholds is of interest. Thus, research is encouraged on how plant and animal species composition, ecological properties and processes, or changes in land use or land management practices influence the ability of ecosystems, for example:

> To control or modify physical factors such as albedo, latent and sensible heat fluxes, regional precipitation, wind speed, and particulate movement in water and air;
>
> To control the movement of biological propagules between ecosystems and affect the spread of indigenous and non-indigenous species, including pest species across the landscape.
>
> To control biogeochemical cycling and nutrient deposition, retention and transport that affect atmospheric properties, soil fertility, and water quality;
>
> To regulate the exchange of energy, water, trace gases, aerosols, and biotic materials between the atmosphere and terrestrial environment under variable and/or changing climatic conditions.

Research also is encouraged on the development and testing of coupled land-atmosphere models that include temporal relationships between climate change and ecosystem feedbacks and fully interactive surface-atmosphere processes.

B. Carbon, CO_2, and Other Trace Gases Related to Global Change.

The goal of research in this area is to improve the scientific basis for understanding, predicting and assessing the quantitative role of the terrestrial biosphere as a source or sink of radiatively active trace gases such as carbon dioxide, methane, and nitrous oxide. The combined results of process, observation, and global modeling studies strongly suggest that terrestrial ecosystems must be taking up and storing significant amounts of carbon

each year, yet we do not know where it is going, how long this might continue, and whether this storage will be permanent or temporary. Improved databases, experiments and process models are needed:

To understand complex interactions, including interactions among the major biogeochemical cycles, that control exchange of CO_2 and other trace gases between the biosphere and the atmosphere for representative terrestrial ecosystems;

To develop databases for the use, intercomparison, and testing of process-based models of net ecosystem productivity, including data to quantify carbon content of terrestrial ecosystems and estimate how sources and sinks of carbon are changing;

To measure continental atmospheric CO_2, carbon isotopes, and oxygen to better quantify processes of terrestrial carbon cycles.

C. Consequences of Global Change on Ecosystems

The goal of research on consequences is to improve the scientific basis for understanding, predicting, and assessing how the structure and function of terrestrial ecosystems (including aquatic ecosystems embedded within terrestrial ecosystems, e.g., streams, lakes, wetlands) respond to global change. Studied changes can be human-induced or natural, including changes in land use and land cover, climate, atmospheric composition, and the frequency and intensity of extreme events of regional or global scale (e.g., El Niño/La Niña, hurricanes, drought). There is a need to understand how existing terrestrial ecosystems are likely to respond to ongoing or predicted environmental changes, and to relate observed changes to likely causes using approaches that examine phenomena at multiple scales. There also is a need to consider the adaptive potential of terrestrial ecosystems to respond to environmental changes, as well as to provide quantitative information for models that generalize from selected study sites to broader areas at local, regional and global levels and/or at multiple temporal scales. Thus, combined experimental and modeling research is encouraged:

To understand and predict how ecosystem processes (e.g., net primary production, respiration, net ecosystem productivity) are affected by combinations of altered atmospheric CO_2 and other trace gas concentrations (e.g., ozone), different climate conditions, changing resource constraints (e.g., nutrients, water and light), and changing land-use patterns (e.g., urban/suburban sprawl, conversion of forest to other uses);

To identify and quantify the mechanism(s) or process(es) controlling observed responses to altered climatic and atmospheric conditions and altered land cover or land use, and to understand both the potential for these mechanisms and processes to undergo adaptation to the changes through physiological adaptations and natural selection, and the consequences of adaptive responses and evolutionary changes on ecosystem function;

To investigate trends, patterns, and relationships among vegetation, climate, and land use to document and understand the interaction between natural and human-dominated systems;

To determine how biological and ecological responses to global-scale environmental changes are manifested at higher levels of ecosystem hierarchy (populations, communities, ecosystem, landscape) of terrestrial environments;

To identify changes in structural components (e.g., landscape pattern, plant or animal community structure, architectural properties of vegetation) caused by different atmospheric, climatic, and land-use activities that will predict the future structure and distribution of ecosystems;

To understand and predict the effects of combinations of altered CO_2, climate conditions, changing resource constraints, and land-use change on biodiversity (e.g., genetic diversity, species diversity, habitat diversity).

III. TECO PROPOSAL OPPORTUNITIES

A. Interactions with Ongoing Agency Programs

Research proposed for this competition is encouraged to take advantage of existing programs, research sites and facilities, or data sets of other agencies with multi-disciplinary efforts. Examples of such existing efforts are: NASA's remote sensing-oriented field campaigns (FIFE, BOREAS, LBA) and Pathfinder data sets; NSF's Long Term Ecological Research (LTER) sites and Land Margin Ecosystem Research (LMER) sites; DOE's National Environmental Research Parks (NERPS), Free-Air CO_2 Enrichment (FACE) field sites, Atmospheric Radiation Measurement (ARM) sites, Program on Ecosystem Research (PER) sites, and AmeriFlux sites; USDA's Management Systems Evaluation Areas (MSEA); and the Global Energy and Water Cycle Experiment (GEWEX) Continental Scale International Project (GCIP) lead by NOAA. *Applications involving the establishment of **new** long-term research facilities or study sites must clearly demonstrate the need for such facilities, including the unique research opportunities they would provide.*

B. Scoping Studies

In addition to interest in applications for research in the above three areas, one-year scoping proposals also will be considered that involve developing and demonstrating the feasibility of new experimental approaches and/or facilities for field studies to investigate the responses and/or feedback effects of terrestrial ecosystems to global environmental changes. The agencies involved in the TECO program recognize the need for new, innovative field experimental approaches and facilities to study interactive effects of environmental changes on terrestrial ecosystems. Accordingly, this announcement also seeks one-year scoping applications to design and test the feasibility of new approaches and/or field experimental systems for studying the effects of environmental changes on ecosystems. Such scoping applications should be clearly identified as such in the title of the proposal.

APPENDIX B

AMENDATORY GUIDANCE TO THE GENERAL GUIDELINES CONTAINED IN APPENDIX C AND APPLICABLE ONLY TO THIS NRA

I. GENERAL

All proposals submitted in response to this NRA for participation in the overall 1998 TECO program, regardless of which sponsoring agency may ultimately administer a resulting award, are subject to the guidance provided in this appendix and in Appendix C. Where conflicts exist between Appendix B and Appendix C, Appendix B shall be the controlling document.

II. PROPOSAL FORMAT AND CONTENT

To provide a consistent format for the review process for this interagency announcement, the preparation and submission of proposals must follow the guidelines given in the NSF Grant Proposal Guide (GPG), NSF 98-2, Chapter II Instructions for Preparation. The forms provided in the NSF Proposal Forms Kit, NSF 98-3, must be used. NSF 98-2 and NSF-98-3 can be obtained from:

NSF Clearinghouse
PO Box 218
Jessup, MD 20794-0218
Telephone: 301-947-2722
e-mail: pubs@nsf.gov
NSF home page: www.nsf.gov

Proposers should note that there is a limit of 15 pages for the Project Description section; visual materials, graphs, and tables count toward the 15 page limit. Also, no appendices are allowed.

All proposals for TECO must be submitted directly to NASA and, thus, electronic submission via the NSF FastLane Project is not an option for TECO and must not be used. Also, the review criteria listed in NSF 98-2, Chapter III NSF Proposal Processing and Review do not apply to TECO; they are superseded by those listed in section III of this appendix.

Principal Investigators may be requested to modify their budgets and work plans to comply with special requirements of the particular agency supporting their award.

III. PROPOSAL REVIEW AND EVALUATION CRITERIA

A. External Peer Review

Applications will be subjected to formal, external peer review (merit review) and will be evaluated against the criteria listed below. These criteria supersede those listed in section (i) of Appendix C and in NSF 98-2, and are of approximately equal importance.

1. The intrinsic merits of the investigation, including:

(a) the overall scientific or technical merit of the proposal or unique and innovative methods, approaches, or concepts demonstrated by the proposal.

(b) the qualifications, capabilities, and relevant experience of the Principal Investigator and any Co-Investigators or collaborators as an indication of their ability to carry the investigation to a successful conclusion within the requested resources, including timely publication of peer-reviewed journal articles.

(c) the ability and commitment of the investigator's institution to provide the necessary support to ensure that the investigation can be completed satisfactorily.

2. The relevance and responsiveness of the proposed research to the goals and objectives of the interagency TECO program, as described in the announcement, including:

(a) the feasibility of accomplishing the stated scientific goals of the proposed investigation and advancing understanding in one or more of the scientific research areas identified in the announcement.

(b) the extent to which the proposal's plan builds on existing research capabilities and/or databases, collaboration with other university and federal efforts, and potential for additional future development, and identifies linkages or joint efforts between experimental and modeling activities.

(c) the likelihood that the research can contribute to the achievement of a goal that is extrinsic or in addition to that of the research field itself, and thereby serve as the basis for new or improved technology or assist in the solution of societal problems.

3. The cost of the investigation including consideration of the realism and reasonableness of the proposed cost

External peer reviewers are selected with regard to both their scientific expertise and the absence of conflicts-of-interest. Both Federal and non-Federal reviewers may be used, and submission of an application constitutes agreement that this is acceptable to the investigator(s) and the submitting institution.

B. Agency Program Review

As part of the evaluation to follow the peer review, program policy factors such as the relevance of the proposed research to the terms of the announcement and an agency's programmatic needs, are criteria that will be used in the selection process. An agency may desire to accept only a portion of a proposer's investigation, in which case the investigator

will be given the opportunity to accept or decline such partial acceptance. In cases in which two or more proposals address similar problems and/or adopt similar approaches to data analysis, the agency may desire joint participation on the part of two or more proposers in a single project. If such overlap involves more than one funding organization, the agency and those organizations will confer and mutually agree to the disposition of those proposals.

IV. AWARD ADMINISTRATION

NSF awards made as a result of this notice will be administered in accordance with the terms of conditions of SF GC-1, Grant General Condition or FDP-II, Federal Demonstration Project. Copies of these documents are available at no cost from the NSF Form and Publication Unit, telephone: (703) 306-1130, or via E-mail: (internet: pubs@nsf.gov). More comprehensive information is contained in the NSF grant Policy Manual (NSF 95-26, July 1995), for sale through the Superintendent of Documents, Government Printing Office, Washington, DC 20402. The telephone number at GPO is (202) 783-3238 for subscription information.

DOE awards made as a result of this notice will be administered in accordance with the DOE Office of Energy Research Financial Assistance Program (10 CFR Part 605).

USDA award authority for this program is contained in section 2(b) of the Act of August 4, 1965, as amended (7 U.S.C. 450i(b)). Under this program, subject to the availability of funds, the Secretary may award competitive research grants for periods not to exceed five years for the support of research projects to further the programs of the Department of Agriculture (USDA). Applications may be submitted by any state agricultural experiment station, college, private organization, corporation, or individual. Applications from scientists at non-United States organizations will not be considered for support. Pursuant to Section 712 of Public Law 103-330 (the Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 1995) funds available in fiscal year 1995 to pay indirect costs on research grants award competitively by CSREES may not exceed 14 per centum of the total Federal funds provided under each award. In addition, pursuant to Sec. 719(b) of public Law 103-330, in the case of any equipment or product that may be authorized to be purchased with the funds provided under this Program, entities are encouraged to purchase only American-made equipment or products.

NOAA awards made as a result of this notice will be subject to the requirements of OMB Circular No. A-110, "Uniform Administrative Requirements for Grants and Other Agreements with Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations", and 15 CFR Part 24, "Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments", as applicable. Applications under this program are not subject to Executive Order 12372, "Intergovernmental Review of Federal Programs."

The authority for NASA awards made as a result of this notice is cited in section (a) (4) of Appendix C.

APPENDIX C

INSTRUCTIONS FOR RESPONDING TO NASA RESEARCH ANNOUNCEMENTS (JANUARY 1997)

(a) General.

(1) Proposals received in response to a NASA Research Announcement (NRA) will be used only for evaluation purposes. NASA does not allow a proposal, the contents of which are not available without restriction from another source, or any unique ideas submitted in response to an NRA to be used as the basis of a solicitation or in negotiation with other organizations, nor is a pre-award synopsis published for individual proposals.

(2) A solicited proposal that results in a NASA award becomes part of the record of that transaction and may be available to the public on specific request; however, information or material that NASA and the awardee mutually agree to be of a privileged nature will be held in confidence to the extent permitted by law, including the Freedom of Information Act.

(3) NRAs contain programmatic information and certain requirements which apply only to proposals prepared in response to that particular announcement. These instructions contain the general proposal preparation information which applies to responses to all NRAs.

(4) A contract, grant, cooperative agreement, or other agreement may be used to accomplish an effort funded in response to an NRA. NASA will determine the appropriate instrument. Contracts resulting from NRAs are subject to the Federal Acquisition Regulation and the NASA FAR. Supplement. Any resultant grants or cooperative agreements will be awarded and administered in accordance with the NASA Grant and Cooperative Agreement Handbook (NPG 5800.1).

(5) NASA does not have mandatory forms or formats for responses to NRAs; however, it is requested that proposals conform to the guidelines in these instructions. NASA may accept proposals without discussion; hence, proposals should initially be as complete as possible and be submitted on the proposers' most favorable terms.

(6) To be considered for award, a submission must, at a minimum, present a specific project within the areas delineated by the NRA; contain sufficient technical and cost information to permit a meaningful evaluation; be signed by an official authorized to legally bind the submitting organization; not merely offer to perform standard services or to just provide computer facilities or services; and not significantly duplicate a more specific current or pending NASA solicitation.

(b) NRA-Specific Items. Several proposal submission items appear in the NRA itself: the unique NRA identifier; when to submit proposals; where to send proposals; number of copies required; and sources for more information. Items included in these instructions may be supplemented by the NRA.

(c) The following information is needed to permit consideration in an objective manner. NRAs will generally specify topics for which additional information or greater detail is

desirable. Each proposal copy shall contain all submitted material, including a copy of the transmittal letter if it contains substantive information.

(1) Transmittal Letter or Prefatory Material.

(i) The legal name and address of the organization and specific division or campus identification if part of a larger organization;

(ii) A brief, scientifically valid project title intelligible to a scientifically literate reader and suitable for use in the public press;

(iii) Type of organization: e.g., profit, nonprofit, educational, small business, minority, women-owned, etc.;

(iv) Name and telephone number of the principal investigator and business personnel who may be contacted during evaluation or negotiation;

(v) Identification of other organizations that are currently evaluating a proposal for the same efforts;

(vi) Identification of the NRA, by number and title, to which the proposal is responding;

(vii) Dollar amount requested, desired starting date, and duration of project;

(viii) Date of submission; and

(ix) Signature of a responsible official or authorized representative of the organization, or any other person authorized to legally bind the organization (unless the signature appears on the proposal itself).

(2) **Restriction on Use and Disclosure of Proposal Information**. Information contained in proposals is used for evaluation purposes only. Offerors or quoters should, in order to maximize protection of trade secrets or other information that is confidential or privileged, place the following notice on the title page of the proposal and specify the information subject to the notice by inserting an appropriate identification in the notice. In any event, information contained in proposals will be protected to the extent permitted by law, but NASA assumes no liability for use and disclosure of information not made subject to the notice.

Notice

Restriction on Use and Disclosure of Proposal Information

The information (data) contained in [insert page numbers or other identification] of this proposal constitutes a trade secret and/or information that is commercial or financial and confidential or privileged. It is furnished to the Government in confidence with the understanding that it will not, without permission of the offeror, be used or disclosed other than for evaluation purposes; provided, however, that in the event a contract (or other agreement) is awarded on the basis of this proposal the Government shall have the right to use and disclose this information (data) to the extent provided in the contract (or other agreement). This restriction does not limit the Government's right to use or disclose this information (data) if obtained from another source without restriction.

(3) **Abstract.** Include a concise (200-300 word if not otherwise specified in the NRA) abstract describing the objective and the method of approach.

(4) **Project Description**.

(i) The main body of the proposal shall be a detailed statement of the work to be undertaken and should include objectives and expected significance; relation to the present state of knowledge; and relation to previous work done on the project and to related work in progress elsewhere. The statement should outline the plan of work, including the broad design of experiments to be undertaken and a description of experimental methods and procedures. The project description should address the evaluation factors in these instructions and any specific factors in the NRA. Any substantial collaboration with individuals not referred to in the budget or use of consultants should be described. Subcontracting significant portions of a research project is discouraged.

(ii) When it is expected that the effort will require more than one year, the proposal should cover the complete project to the extent that it can be reasonably anticipated. Principal emphasis should be on the first year of work, and the description should distinguish clearly between the first year's work and work planned for subsequent years.

(5) **Management Approach**. For large or complex efforts involving interactions among numerous individuals or other organizations, plans for distribution of responsibilities and arrangements for ensuring a coordinated effort should be described.

(6) **Personnel**. The principal investigator is responsible for supervision of the work and participates in the conduct of the research regardless of whether or not compensated under the award. A short biographical sketch of the principal investigator, a list of principal publications and any exceptional qualifications should be included. Omit social security number and other personal items which do not merit consideration in evaluation of the proposal. Give similar biographical information on other senior professional personnel who will be directly associated with the project. Give the names and titles of any other scientists and technical personnel associated substantially with the project in an advisory capacity. Universities should list the approximate number of students or other assistants, together with information as to their level of academic attainment. Any special industry-university cooperative arrangements should be described.

(7) **Facilities and Equipment.**

(i) Describe available facilities and major items of equipment especially adapted or suited to the proposed project, and any additional major equipment that will be required. Identify any Government-owned facilities, industrial plant equipment, or special tooling that are proposed for use. Include evidence of its availability and the cognizant Government points of contact.

(ii) Before requesting a major item of capital equipment, the proposer should determine if sharing or loan of equipment already within the organization is a feasible alternative. Where such arrangements cannot be made, the proposal should so state. The need for items that typically can be used for research and non-research purposes should be explained.

(8) **Proposed Costs.**

(i) Proposals should contain cost and technical parts in one volume: do not use separate "confidential" salary pages. As applicable, include separate cost estimates for salaries and wages; fringe benefits; equipment; expendable materials and supplies; services; domestic and foreign travel; ADP expenses; publication or page charges; consultants; subcontracts; other miscellaneous identifiable direct costs; and indirect costs. List salaries and wages in appropriate organizational categories (e.g., principal investigator, other scientific and engineering professionals, graduate students, research assistants, and technicians and other non-professional personnel). Estimate all staffing data in terms of staff-months or fractions of full-time.

(ii) Explanatory notes should accompany the cost proposal to provide identification and estimated cost of major capital equipment items to be acquired; purpose and estimated number and lengths of trips planned; basis for indirect cost computation (including date of most recent negotiation and cognizant agency); and clarification of other items in the cost proposal that are not self-evident. List estimated expenses as yearly requirements by major work phases.

(iii) Allowable costs are governed by FAR Part 31 and the NASA FAR Supplement Part 1831 (and OMB Circulars A-21 for educational institutions and A-122 for nonprofit organizations).

(9) **Security**. Proposals should not contain security classified material. If the research requires access to or may generate security classified information, the submitter will be required to comply with Government security regulations.

(10) **Current Support**. For other current projects being conducted by the principal investigator, provide title of project, sponsoring agency, and ending date.

(11) **Special Matters.**

(i) Include any required statements of environmental impact of the research, human subject or animal care provisions, conflict of interest, or on such other topics as may be required by the nature of the effort and current statutes, executive orders, or other current Government-wide guidelines.

(ii) Proposers should include a brief description of the organization, its facilities, and previous work experience in the field of the proposal. Identify the cognizant Government audit agency, inspection agency, and administrative contracting officer, when applicable.

(d) **Renewal Proposals**

(1) Renewal proposals for existing awards will be considered in the same manner as proposals for new endeavors. A renewal proposal should not repeat all of the information that was in the original proposal. The renewal proposal should refer to its predecessor, update the parts that are no longer current, and indicate what elements of the research are expected to be covered during the period for which support is desired. A description of any significant findings since the most recent progress report should be included. The renewal proposal should treat, in reasonable detail, the plans for the next period, contain a cost estimate, and otherwise adhere to these instructions.

(2) NASA may renew an effort either through amendment of an existing contract or by a new award.

(e) **Length.** Unless otherwise specified in the NRA, effort should be made to keep proposals as brief as possible, concentrating on substantive material. Few proposals need exceed 15-20 pages. Necessary detailed information, such as reprints, should be included as attachments. A complete set of attachments is necessary for each copy of the proposal. As proposals are not returned, avoid use of "one-of-a-kind" attachments.

(f) **Joint Proposals**.

(1) Where multiple organizations are involved, the proposal may be submitted by only one of them. It should clearly describe the role to be played by the other organizations and indicate the legal and managerial arrangements contemplated. In other instances, simultaneous submission of related proposals from each organization might be appropriate, in which case parallel awards would be made.

(2) Where a project of a cooperative nature with NASA is contemplated, describe the contributions expected from any participating NASA investigator and agency facilities or equipment which may be required. The proposal must be confined only to that which the proposing organization can commit itself. "Joint" proposals which specify the internal arrangements NASA will actually make are not acceptable as a means of establishing an agency commitment.

(g) **Late Proposals**. A proposal or modification received after the date or dates specified in an NRA may be considered if doing so is in the best interests of the Government.

(h) **Withdrawal.** Proposals may be withdrawn by the proposer at any time before award. Offerors are requested to notify NASA if the proposal is funded by another organization or of other changed circumstances which dictate termination of evaluation.

(i) **Evaluation Factors**

(1) Unless otherwise specified in the NRA, the principal elements (of approximately equal weight) considered in evaluating a proposal are its relevance to NASA's objectives, intrinsic merit, and cost.

(2) Evaluation of a proposal's relevance to NASA's objectives includes the consideration of the potential contribution of the effort to NASA's mission.

(3) Evaluation of its intrinsic merit includes the consideration of the following factors of equal importance:

(i) Overall scientific or technical merit of the proposal or unique and innovative methods, approaches, or concepts demonstrated by the proposal.

(ii) Offeror's capabilities, related experience, facilities, techniques, or unique combinations of these which are integral factors for achieving the proposal objectives.

(iii) The qualifications, capabilities, and experience of the proposed principal investigator, team leader, or key personnel critical in achieving the proposal objectives.

(iv) Overall standing among similar proposals and/or evaluation against the state-of-the-art.

(4) Evaluation of the cost of a proposed effort may include the realism and reasonableness of the proposed cost and available funds.

(j) **Evaluation Techniques**. Selection decisions will be made following peer and/or scientific review of the proposals. Several evaluation techniques are regularly used within NASA. In all cases proposals are subject to scientific review by discipline specialists in the area of the proposal. Some proposals are reviewed entirely in-house, others are evaluated by a combination of in-house and selected external reviewers, while yet others are subject to the full external peer review technique (with due regard for conflict-of-interest and protection of proposal information), such as by mail or through assembled panels. The final decisions are made by a NASA selecting official. A proposal which is scientifically and programmatically meritorious, but not selected for award during its initial review, may be included in subsequent reviews unless the proposer requests otherwise.

(k) **Selection for Award**.

(1) When a proposal is not selected for award, the proposer will be notified. NASA will explain generally why the proposal was not selected. Proposers desiring additional information may contact the selecting official who will arrange a debriefing.

(2) When a proposal is selected for award, negotiation and award will be handled by the procurement office in the funding installation. The proposal is used as the basis for negotiation. The contracting officer may request certain business data and may forward a model award instrument and other information pertinent to negotiation.

(l) **Cancellation of NRA**. NASA reserves the right to make no awards under this NRA and to cancel this NRA. NASA assumes no liability for canceling the NRA or for anyone's failure to receive actual notice of cancellation.

APPENDIX D

GUIDELINES FOR FOREIGN PARTICIPATION

NASA accepts proposals from entities located outside the U.S. in response to this NRA. Proposals from non-U.S. entities should not include a cost plan. Non-U.S. proposals, and U.S. Proposals that include non-U.S. participation, must be endorsed by the respective government agency or funding/sponsoring institution in the country from which the non-U.S. participant is proposing. Such endorsement should indicate the following points: (1) The proposal merits careful consideration by NASA; and (2) If the proposal is selected, sufficient funds will be made available by the sponsoring foreign agency to undertake the activity as proposed.

Proposals, along with the requested number of copies and Letter of Endorsement must be forwarded to NASA in time to arrive before the deadline established for this NRA. In addition, one copy of each of these documents should be sent to:

NASA Headquarters
Office of External Relations
Mission to Planet Earth Division
Mail Code IY
Washington, DC 20546
USA

Any materials sent by courier or express mail (e.g., Federal Express) should be sent to:

NASA Headquarters
Office of External Relations
Mission to Planet Earth Division
Mail Code IY
300 E Street, SW
Washington, DC 20024-3210

All proposals must be typewritten in English. All non-U.S. proposals will undergo the same evaluation and selection process as those originating in the U.S. Non-U.S. proposals and U.S. Proposals that include non-U.S. participation, must follow all other guidelines and requirements described in this NRA. Sponsoring non-U.S. agencies may, in exceptional situations, forward a proposal without endorsement to the above address, if review and endorsement are not possible before the announced closing date. In such cases, however, NASA's Mission To Planet Earth Division of the Office of External Relations should be advised when a decision on the endorsement is to be expected.

Successful and unsuccessful proposers will be contacted directly by the NASA Program Office coordinating the NRA. Copies of these letters will be sent to the sponsoring government agency.

APPENDIX E

ELECTRONIC ADDRESSES

The URL references listed below are available for on-line access via the following World Wide Web Home-Pages:

(1) 1998 TECO Announcement on NASA MTPE Home Page:

http://www.hq.nasa.gov/office/mtpe/

(2) TECO Home Page:

http://teco.ornl.gov/

(3) Relevant NASA references:

MTPE Home Page:
http://www.hq.nasa.gov/office/mtpe/

LBA Home Page:
http://www-eosdis.ornl.gov/lba_cptec/

BOREAS Home Page:
http://boreas.gsfc.nasa.gov/

Land Cover and Land Use Change Home Page:
http://lcluc.gecp.virginia.edu/

(4) Relevant NSF references:

http://www.nsf.gov

(5) Relevant DOE references:

http://www.er.doe.gov/production/ober/

(6) Relevant USDA references:

http://www.reeusda.gov/nri

(7) Relevant NOAA references:

http://www.noaa.gov/

GCIP Home Page:
http://www.ghcc.msfc.nasa.gov/GCIP/